



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Science in Medical Radiology & Imaging Technology

Course Name – Conventional Radiography and Equipment

Course Code - BMRIT203

(Semester II)

Time allotted : 1 Hrs.15 Min.

Full Marks : 60

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

Choose the correct alternative from the following :

- (1) In modern image intensifier, the input screen is made-up of

a) Zn cd sulphide-silver activated	b) Cesium iodide
c) Calcium tungstate	d) Zn sulphide
- (2) Brightness gain in image intensifier is

a) Minification gain \times flux gain	b) Minification gain \div flux gain
c) Minification gain + flux gain	d) Minification gain - flux gain
- (3) Flux gain is

a) Number of output light photon divided by number of input X-ray photons	b) Number of output light photons multiplied by number of input X-ray photons
c) Number of output light photons plus number of input X-ray photons	d) Number of output light photons minus number of input X-ray photons
- (4) Magnification mode results in

a) Better spatial resolution	b) Better contrast resolution
c) Higher patient dose	d) All of these
- (5) During fluoroscopy

a) Real time dynamic viewing	b) Spot film taken
c) Contrast studies	d) All of these
- (6) Large crystal size of phosphor in screen cause the following change in speed

a) Increases	b) Decreases
c) No change	d) Initially decreases than increases
- (7) Which of the Following Helps in Reducing Internal Radiation Exposure?

- a) Control of Contamination
c) Good Hygiene
- b) Use Proper Protective Equipment
d) All of these
- (8) What Does the Radiation Term ALARA Stand For?
- a) As Low As Reasonably Achievable
c) As Long as Radiation is Allowable
- b) Accepted Lowest Achievable Radiation Alarms
d) Allowable Levels of Accepted Radiation
- (9) In Radiography Quality Control, Which of the Following Means that the X-ray's Central Ray Will Actually Come Out on the Area Where the Cross-Hairs Meet?
- a) Beam perpendicularity
c) None of the Above
- b) Field Congruence
d) All of these
- (10) What is the Device used for Generating Beams of Waves or Particles that Have Parallel Paths?
- a) Collimator
c) FMRI
- b) Echocardiography Machine
d) Ultrasonography Machine
- (11) If a radiographic procedure requires 20 mAs for a focal spot-to-receptor distance (FRD) of 40 in., a FRD of 80 in. would require
- a) 5 mAs.
c) 40 mAs.
- b) 10 mAs.
d) 80 mAs
- (12) The maximum field of view which can be obtained with a specific radiographic system is generally limited by the
- a) Focal spot size.
c) Anode angle
- b) Anode size
d) Cathode
- (13) Changing from a 5:1 ratio to a 10:1 ratio grid will increase
- a) Patient exposure
c) Required KV or MAS
- b) Image contrast
d) All of these
- (14) Potential sources of blurring within a radiograph receptor include
- a) Light cross-over within the film
c) Spreading of light within the screen
- b) Space between the film and intensifying screen
d) All of these
- (15) When a geometric magnification technique is used, as in mammography, it can
- a) Increase patient exposure
c) Decrease blurring of small objects and improve visibility of detail.
- b) Increase scattered radiation
d) Require a larger receptor
- (16) The general criteria of standard of quality are set by the _____.
- a) AERB
c) AAPM
- b) ACR
d) All of these
- (17) Which of the following test tools is used for testing the "Congruence of optical and radiation fields"?
- a) kVp meter
c) Focal spot test tool
- b) Beam alignment test tool
d) Collimator test tool
- (18) Collimator test tools are made of
- a) Plastic
c) Tungsten plate
- b) Fibre glass
d) Molybdenum
- (19) In "congruence of optical and radiation fields" focus to film distance (FFD) is kept at

- a) 75 cm
c) 120 cm
- b) 100 cm
d) 180 cm
- (20) X-rays were first discovered on
a) November 8, 1895
c) November 8, 1896
- b) October 8, 1895,
d) November 8, 1795
- (21) The vacuum amount in vacuum x-ray tube is
a) about 10^{-2} Pa
c) about 1014 Pa
- b) about 10^{-4} Pa
d) bout 10^{-40} Pa
- (22) Coolidge tube also known as
a) Cold cathode tube
c) Mix Tube
- b) Hot Cathode tube
d) Dark Tube
- (23) x-rays are created from the conversion ofof electrons into electromagnetic radiation when they are decelerated by interaction with a target material
a) kinetic energy
c) both
- b) potential energy
d) binding energy
- (24) A common unit of energy is the....., equal to the energy attained by an electron accelerated across a potential difference of 1 V.
a) ev
c) mega electron
- b) volt
d) none of these
- (25) Major factors that affect x-ray production efficiency include the
a) atomic number of the target material
c) both
- b) kinetic energy of the incident electrons
d) none of these
- (26) which of the following is the binding energy of tungsten(L-Shell)?
a) 10.2 keV
c) 12.2 keV
- b) 11.2 keV
d) 13.2 keV
- (27) For continuous fluoroscopy, the tube current is relatively low, from
a) 1 to 5 Ma
c) 2 to 5 mA
- b) 2 to 10 mA
d) 5 to 10 mA
- (28) Which of the following are the major selectable parameters on the x-ray generator control panel that determine the x-ray beam characteristics
a) kv
c) mas
- b) ma
d) all of these
- (29) The cathode is theelectrode in the x-ray tube.
a) negative
c) neutral
- b) positive
d) none of these
- (30) Useful electrons release from the filament to produce x- ray termed as
a) thermions
c) current
- b) electrons
d) thermal electrons
- (31) Filament is embedded onin the cathode side.
a) focusing cup
c) focal pot
- b) filament circuit
d) target
- (32) The anode is a metal target electrode that is maintained at a large relative to the cathode.

ray tube port.

- a) 1 to 2 mm
- b) 2 to 4 mm
- c) 1 to 4 mm
- d) 1 to 6 mm

(45) Dedicated mammography tubes, require.....to permit the transmission of lowenergy x-rays.

- a) beryllium
- b) silicon
- c) glass
- d) aluminum

(46)is the most commonly used added filter material

- a) aluminum
- b) mercury
- c) lead
- d) copper

(47)” filters are used in CT to reduce dose to the periphery of the patient, where x-ray paths are shorter and fewer x-rays are required.

- a) Bow-tie
- b) Equalization
- c) added
- d) inherent

(48) The principal function of an x-ray generator is to provideat a high voltage to an x-ray tube.

- a) Current
- b) Voltage
- c) Potential Difference
- d) resistant

(49) Variatiation in the intensity of the Beam is termed as

- a) Scatter Beam
- b) off focus beam
- c) Attenuation
- d) Anode Heel Effect

(50) The SI unit of power is

- a) watt
- b) joule
- c) power
- d) ampere

(51) The focal spot size (i.e., large or small) is usually determined by thesetting

- a) ma
- b) kv
- c) mas
- d) technique

(52) The....., also known as the automatic exposure control (AEC) system

- a) . Backup timer
- b) Phototimer
- c) Countdown timer
- d) Digital timer

(53) Anboosts the signal, which is fed to a voltage comparator and integration circuit.

- a) Timer
- b) Backup timer
- c) Apmlifier
- d) AEC

(54) The power rating of an x-ray tube or generator is thepower that an x-ray tube focal spot can accept or the generator can deliver.

- a) maximul
- b) minimul
- c) useful
- d) none of these

(55)is the SI unit of energy

- a) joule
- b) Ampere
- c) Ohm
- d) Volt

(56) Tube voltage (kV) determines the maximum energy in thespectrum and affects the quality of the output spectrum.

- a) Bremsstrahlung
c) Both
- b) Characteristic
d) none of these
- (57) The quantity of x-rays is directly proportional to the product of tube current and.....
- a) exposure time
c) kv
- b) filament circuit
d) ma
- (58) which of the following modifies the quantity and quality of the x-ray beam by preferentially removing the low-energy photons in the spectrum.
- a) beam filtration
c) BLD
- b) collimator
d) none of these
- (59)affects the quality of the emitted x-ray spectrum
- a) Anode Material
c) Filament
- b) Generator Waveform
d) focal spoot
- (60) Electrons emitted from the tungsten filament form a small cloud in the immediate vicinity of the filament. This collection of negatively charged electrons forms what is called the
- a) positive charge
c) space charge effect
- b) space charge
d) negative charge